

//Q1. C program to print the Fibonacci series using recursion.

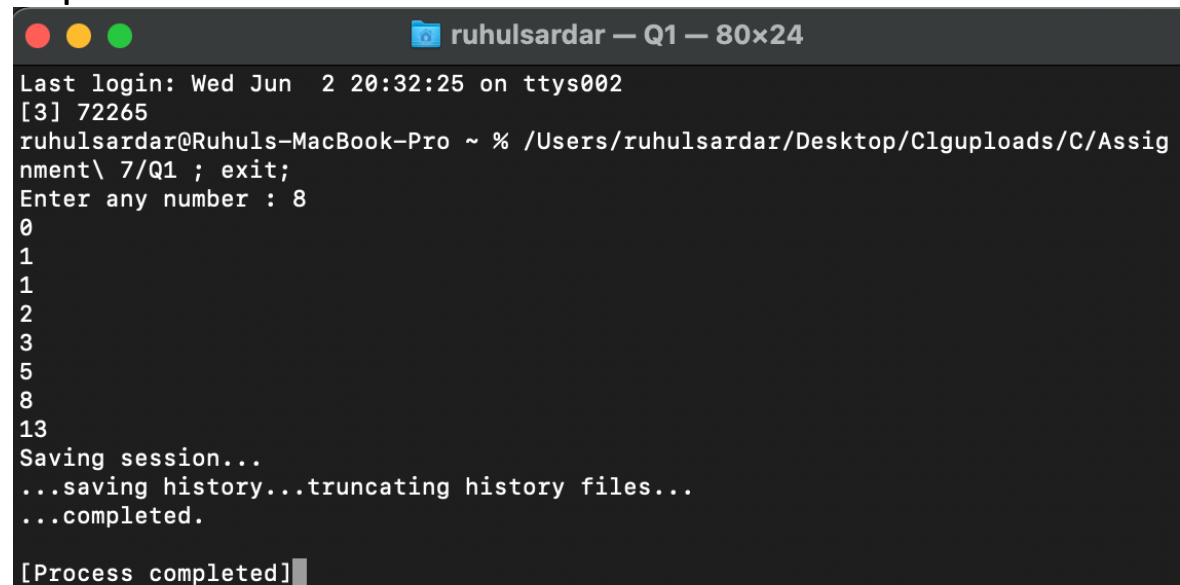
```
#include<stdio.h>

int fibo(int n)
{
    if (n <= 1)
        return n;
    return fibo(n-1) + fibo(n-2);
}

int main (){
    int n;
    printf("Enter any number : ");
    scanf("%d",&n);
    for(int i=0; i<n; i++){
        int fib = fibo(i);
        printf("%d ", fib);
    }

    return 0;
}
```

Output:



```
ruhulsardar — Q1 — 80x24
Last login: Wed Jun  2 20:32:25 on ttys002
[3] 72265
ruhulsardar@Ruhuls-MacBook-Pro ~ % /Users/ruhulsardar/Desktop/Clguploads/C/Assignment\ 7/Q1 ; exit;
Enter any number : 8
0
1
1
2
3
5
8
13
Saving session...
...saving history...truncating history files...
...completed.

[Process completed]
```

//Q2. C program to print the factorial of a number using recursion.

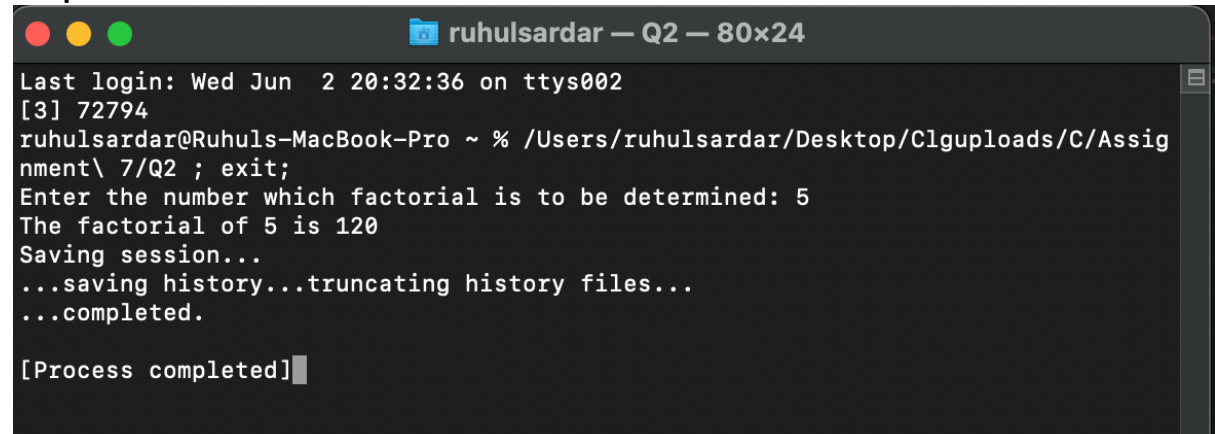
```
#include<stdio.h>

int fact(int n){
    if(n<=1)
        return 1;
    return n*fact(n-1);
}

int main(){
    int n;
    printf("Enter the number which factorial is to be determined: ");
    scanf("%d", &n);
    int F = fact(n);
    printf("The factorial of %d is %d", n,F);

    return 0;
}
```

Output:

A terminal window titled "ruhulsardar — Q2 — 80x24" showing the execution of the C program. The window has a dark background with light-colored text. The output shows the user entering '5' and the program calculating the factorial as 120. The terminal also shows system messages like "Last login: Wed Jun 2 20:32:36 on ttys002" and "Saving session...".

```
ruhulsardar — Q2 — 80x24
Last login: Wed Jun  2 20:32:36 on ttys002
[3] 72794
ruhulsardar@Ruhuls-MacBook-Pro ~ % /Users/ruhulsardar/Desktop/Clguploads/C/Assignment\ 7/Q2 ; exit;
Enter the number which factorial is to be determined: 5
The factorial of 5 is 120
Saving session...
...saving history...truncating history files...
...completed.

[Process completed]
```

//Q3. C program to print the non-Fibonacci series using recursion.

```
#include<stdio.h>

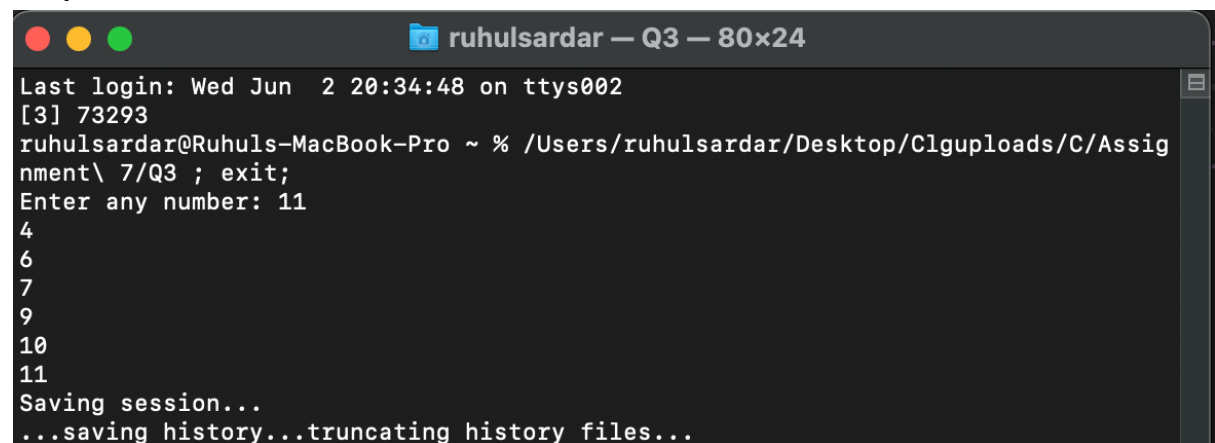
int fib(int n){
    if(n<=1)
        return n;
    return fib(n-1)+fib(n-2);
}

void nonFib(int n){
    int fibn, fibm;
    for(int i=0; i<n; i++){
        fibn = fib(i);
        fibm = fib(i+1);
        for(int j=fibn+1; j<fibm; j++){
            if(j<=n)
                printf("%d ", j);
            else
                break;
        }
    }
}

int main(){
    int n;
    printf("Enter any number: ");
    scanf("%d", &n);
    nonFib(n);

    return 0;
}
```

Output:

A screenshot of a macOS terminal window titled "ruhulsardar — Q3 — 80x24". The terminal shows the execution of the C program. It starts with a login message, then the user enters "11" in response to the prompt "Enter any number:". The program outputs the numbers 4, 6, 7, 9, 10, and 11, each on a new line. The terminal concludes with "Saving session..." and "...saving history...truncating history files...".

```
ruhulsardar — Q3 — 80x24
Last login: Wed Jun  2 20:34:48 on ttys002
[3] 73293
ruhulsardar@Ruhuls-MacBook-Pro ~ % /Users/ruhulsardar/Desktop/Clguploads/C/Assignment\ 7/Q3 ; exit;
Enter any number: 11
4
6
7
9
10
11
Saving session...
...saving history...truncating history files...
```

//Q4. C program to print the GCD of 2 numbers using recursion.

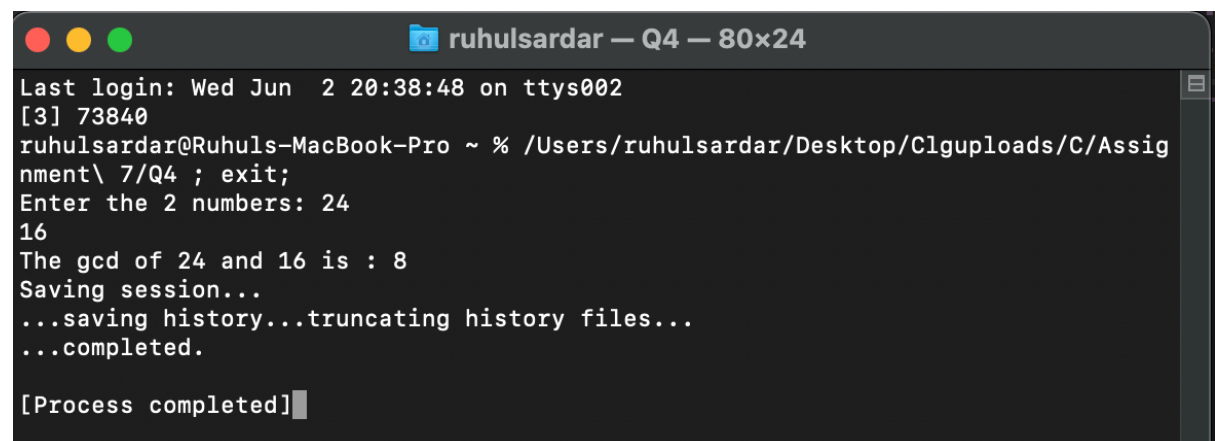
```
#include<stdio.h>
#include<stdlib.h>

int gcd(int a, int b){
    if(b==0)
        return a;
    return gcd(b,a%b);
}

int main(){
    int x,y;
    printf("Enter the 2 numbers: ");
    scanf("%d%d", &x, &y);
    int G = gcd(x,y);
    printf("The gcd of %d and %d is : %d", x,y,G);

    return 0;
}
```

Output:



A terminal window titled "ruhulsardar — Q4 — 80x24" showing the execution of the C program. The window has a dark background with light-colored text. The output shows the user entering 24 and 16, and the program outputting the GCD as 8. The terminal also shows system messages like "Last login: Wed Jun 2 20:38:48 on ttys002" and "Saving session...".

```
ruhulsardar — Q4 — 80x24
Last login: Wed Jun 2 20:38:48 on ttys002
[3] 73840
ruhulsardar@Ruhuls-MacBook-Pro ~ % /Users/ruhulsardar/Desktop/C/guploads/C/Assignment\ 7/Q4 ; exit;
Enter the 2 numbers: 24
16
The gcd of 24 and 16 is : 8
Saving session...
...saving history...truncating history files...
...completed.

[Process completed]
```

//Q5. C program for Tower of Hanoi.

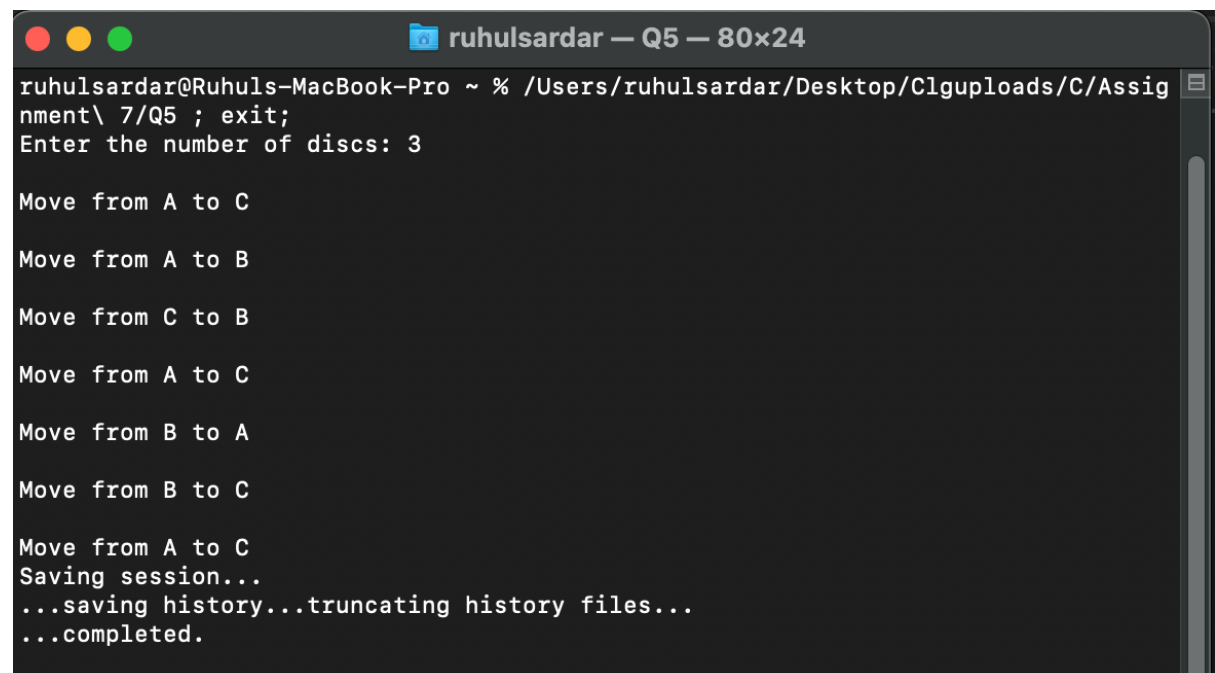
```
#include<stdio.h>

void TOH(int n, char s, char d, char a){
    if(n==1)
        printf("\nMove from %c to %c", s,d);
    else{
        TOH(n-1,s,a,d);
        printf("\nMove from %c to %c", s,d);
        TOH(n-1,a,d,s);
    }
}

int main(){
    int n;
    printf("Enter the number of discs: ");
    scanf("%d", &n);
    TOH(n,'A','C','B');

    return 0;
}
```

Output:



The screenshot shows a terminal window titled "ruhulsardar — Q5 — 80x24". The prompt is "ruhulsardar@Ruhuls-MacBook-Pro ~ %". The user enters the command "/Users/ruhulsardar/Desktop/Clguploads/C/Assignment\ 7/Q5 ; exit;". The program prompts "Enter the number of discs: 3". The output shows the sequence of moves for 3 discs: "Move from A to C", "Move from A to B", "Move from C to B", "Move from A to C", "Move from B to A", "Move from B to C", "Move from A to C". The program then prints "Saving session...", "...saving history...truncating history files...", and "...completed."

```
ruhulsardar@Ruhuls-MacBook-Pro ~ % /Users/ruhulsardar/Desktop/Clguploads/C/Assignment\ 7/Q5 ; exit;
Enter the number of discs: 3

Move from A to C

Move from A to B

Move from C to B

Move from A to C

Move from B to A

Move from B to C

Move from A to C
Saving session...
...saving history...truncating history files...
...completed.
```